

Are all anemones created equal?
The role of two host sea anemones in the population dynamics of the anemonefish
Amphiprion bicinctus in the northern Red Sea

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Project Abstract:

In the northern Red Sea, the two-banded anemonefish *Amphiprion bicinctus* lives in a symbiotic relationship with two different host species of giant sea anemone, *Entacmaea quadricolor* and *Heteractis crispa*. However, the fish population is unevenly distributed between these two hosts. *H. crispa* primarily hosts juveniles and sub-adults while the majority of *E. quadricolor* host large breeding pairs of *A. bicinctus*. *E. quadricolor* hosts fewer juvenile and sub-adult fish compared to *H. crispa*. Thus, *H. crispa* may serve as a nursery habitat for *A. bicinctus*. Additionally, *H. crispa* might be a sub-optimal, less-preferred host that is only inhabited by juveniles because they are competitively excluded from the preferred host *E. quadricolor*. My research uses a combination of field and laboratory studies to understand the factors that influence this pattern. In May-June 2010, field studies will be performed in the Gulf of Aqaba, northern Red Sea. Using SCUBA, we will conduct fish removal experiments to determine host preference of *A. bicinctus* in situ. Movement of fish from their resident anemones into recently vacated anemones will shed light on possible host preference by the anemonefish. Host selection experiments will be conducted in the laboratory to determine which host the fish prefers when it is alone and when it is in the presence of conspecific fish of varying sizes. Finally, the growth rates of juvenile *A. bicinctus* will be monitored in each host and without a host to determine possible differences in physiological benefits provided by the hosts. *A. bicinctus*, *E. quadricolor*, and *H. crispa* are all sold in the aquarium trade and the majority of individuals are collected from the wild. Careful management is required to ensure that this harvest is sustainable. Understanding the relationship of *A. bicinctus* with its host anemones will aid in the conservation of these charismatic reef animals.